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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/734,540

12/12/2003

Paul Yang

14101 B

9708

36672 7590 04/10/2006

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EXAMINER

KRAUSE, JUSTIN MITCHELL

ART UNIT

PAPER NUMBER

3682

DATE MAILED: 04/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/734,540

Applicant(s)

YANG ET AL.

Examiner

Justin Krause

Art Unit

3682

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 March 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-8 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-3 and 5-8 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

This Office Action is in response to amendments filed March 31, 2006. Claims 1-3 and 5-8 are pending, claim 4 was cancelled by applicant.

#### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-3 and 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation "hard" in claim 1 remains indefinite because there is still no basis for comparison as to what defines "hard". Hard is a relative term and no reference has been established.

In claim 6 "normal atmospheric temperature" is indefinite because it is unclear what temperature is defined as normal.

#### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-3 and 5-8, as best understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundgren (US Patent 4,173,907) in view of Benson et al (US Patent 4,859,394).

Lundgren discloses a reflow device for a ball screw provided with a recirculating path (6), capable of being fixed to a screw nut assembly and integrally combined with a screw nut, the reflow device including a hard portion (7) and a soft portion (5), the hard portion combined with the soft portion.

Lundgren does not disclose the reflow device wherein the rolling balls are surrounded by the soft portion.

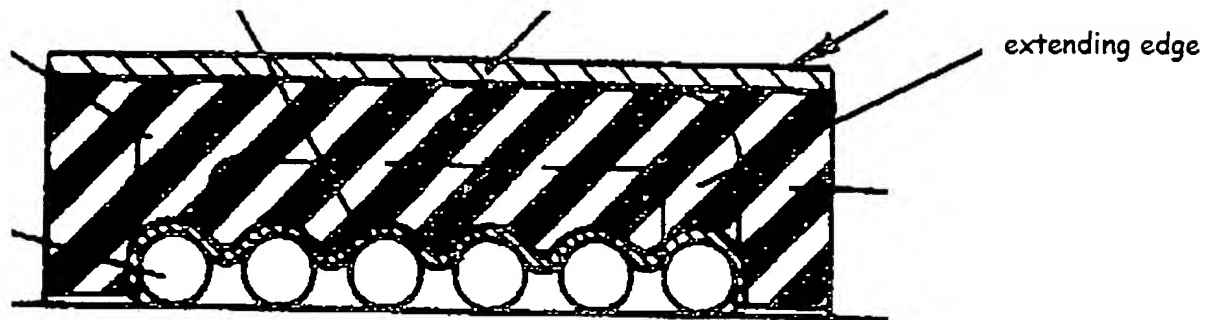
Benton teaches of a reflow device wherein the rolling balls are surrounded by a soft portion (64) to create a low friction endless track for the balls to recirculate (Col 2, line 47-66).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Lundgren and surround the reflow path with soft material to create a low friction, endless track as taught by Benton.

There exists thermoplastics that exist having a hardness of 35D-63D, tensile stress of 10.33 MPa-41MPa, and Flexural modulus of 30-330 MPa.

According to MATWEB online material database, Thermoplastic Polyurethane has properties that meet these ranges. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a material such as thermoplastic polyurethane based on its suitability for the intended use of the device.

Regarding claim 2, Lundgren discloses a soft portion provided with an extending edge connecting to the recirculating path.



Regarding claim 3, Lundgren discloses that the soft portion may be thermoplastic. (Col 2, line 3)

Regarding claims 7 and 8, Lundgren discloses the hard portion should be made of a material which is resistant against external influence (Col 2, lines 14-16) and is capable of being made of metal (Steel, Col 2, line 15) or polyacetal material which are capable of resisting external influence. Further, a selection of material suited to the intended use of the device would have been obvious to one of ordinary skill at the time the invention was made.

### ***Response to Arguments***

5. The limitation "soft" is now explicitly defined and examiner withdraws the rejection under 2<sup>nd</sup> paragraph of 35 USC 112 regarding this limitation.
6. Applicant claims in remarks to have omitted the limitation of "normal atmospheric temperature" from claim 6, however the limitation is not deleted from the amended claims. The rejection is maintained,

7. Applicant's arguments filed March 31, 2006 have been fully considered but they are not persuasive.

Applicant argues that the present invention is drawn to a reflow device for a ball screw whereas the Lundgren and Benton references are directed to ball screw nut structure.

It is unclear what the argument is, if applicant is intending to argue that the art is non-analogous, the Examiner finds the to be analogous to each other. The present invention as clearly shown and described, is intended to be used with or in a ball screw nut.

Applicant argues that the references cited will generate noise during use.

Examiner finds that claimed invention does not claim any structural language that is not disclosed in the prior art, therefore the prior art structure is capable of performing the intended use.

Applicant argues that emphasis of the reference is directed at the structure of the screw nut and not on the reflow device

Examiner finds a part of the structure of the screw nut as shown in Lundgren is the reflow device, which when combined with Benton, anticipates the claimed invention.

Applicant argues that the Benton reference is made of a single material.

Examiner notes the Benton reference was used merely to teach the use of a soft portion surrounding the reflow track to produce a low friction track for the balls to recirculate in. It does not stand alone as anticipatory, which is why a rejection of

obviousness under 35 USC 103 was made. The combination of the hard and soft material structure of Lundgren **combined** with the teachings of Benton would have been obvious at the time the invention was made and anticipates the claimed language.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Krause whose telephone number is 571-272-3012. The examiner can normally be reached on Monday - Friday, 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMK

4/7/06

A handwritten signature in black ink, appearing to read 'Richard Ridley', is positioned above the printed name and title.

RICHARD RIDLEY  
SUPERVISORY PATENT EXAMINER